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IMPLEMENTATION PLAN REVIEW FOR WEST VIRGINIA AS REQUIRED BY THE ENERGY SUPPLY AND ENVIRONMENTAL COORDINATION ACT

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IMPLEMENTATION PLAN REVIEW FOR WEST VIRGINIA AS REQUIRED BY THE ENERGY SUPPLY AND ENVIRONMENTAL COORDINATION ACT

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16. ABSTRACT

Section IV of the Energy Supply and Environmental Coordination Act of 1974, (ESECA) requires EPA to review each State Implementation Plan (SIP) to determine if revisions can be made to control regulations for stationary fuel combustion sources without interferring with the attainment and maintenance of the national ambient air quality standards. This document, which is also required by Section IV of ESECA, is EPA's report to the State indicating where regulations might be revised.

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FOR
WEST VIRGINIA
AS REQUIRED BY THE ENERGY SUPPLY AND ENVIRONMENTAL COORDINATION ACT

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Research Triangle Park, North Carolina 27711

February 1975

WEST VIRGINIA

ENERGY SUPPLY AND ENVIRONMENTAL COORDINATION ACT
(SECTION IV - STATE IMPLEMENTATION PLAN REVIEW)

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1.0 EXECUTIVE SUMMARY

The enclosed report is the U. S. Environmental Protection Agency's (EPA) response to Section IV of the Energy Supply and Environmental Coordination Act of 1974 (ESECA). Section IV requires EPA to review each State Implementation Plan (SIP) to determine if revisions can be made to control regulations for stationary fuel combustion sources without interfering with the attainment and maintenance of the National Ambient Air Quality Standards (NAAQS). In addition to requiring that EPA report to the State on whether control regulations might be revised, ESECA provides that EPA must approve or disapprove any revised regulations relating to fuel burning stationary sources within three months after they are submitted to EPA by the States. The States may, as in the Clean Air Act of 1970, initiate State Implementation Plan revisions; ESECA does not, however, require States to change any existing plan.

Congress has intended that this report provide the State with information on excessively restrictive control regulations. The intent of ESECA is that SIP's, wherever possible, be revised in the interest of conserving low sulfur fuels or converting sources which burn oil or natural gas to coal. EPA's objective in carrying out the SIP reviews, therefore, has been to try to establish if emissions from combustion sources may be increased. Where an indication can be found that emissions from certain fuel burning sources can be increased and still attain and maintain NAAQS, it may be plausible that fuel resource allocations can be altered for "clean fuel savings" in a manner consistent with both environmental and national energy needs.

In many respects, the ESECA SIP reviews parallels EPA's policy on clean fuels. The Clean Fuels Policy has consisted of reviewing implementation plans with regards to saving low sulfur fuels and, where the primary sulfur dioxide air quality standards were not exceeded, to encourage States to either defer compliance regulations or to revise the SO_2 emission regulations. The States have also been asked to discourage large scale shifts from coal to oil where this could be done without jeopardizing the attainment and maintenance of the NAAQS.

To date, EPA's fuels policy has addressed only those States with the largest clean fuels saving potential. Several of these States have or are currently in the process of revising SO_2 regulations. These States are generally in the Eastern half of the United States. ESECA, however, extends the analysis of potentially over-restrictive regulations to all 55 States and territories. In addition, the current reviews address the attainment and maintenance of all the National Ambient Air Quality Standards.

There are, in general, four predominant reasons for the existence of overly restrictive emission limitations within the State Implementation Plans. These are (1) the state's prerogative to surpass NAAQS; (2) the use of the example region approach in developing State-wide air quality control strategies; (3) the existence of state air quality standards which are more stringent than NAAQS; and (4) the "hot spots" in only part of an Air Quality Control Region (AQCR) which have been used as the basis for controlling the entire region. Since each of these situations effect many State plans and in some instances conflict with current national energy concerns, a review of the State Implementation Plans is a logical follow-up to EPA's initial appraisal of the SIP's conducted in 1972. At that time SIP's were approved by EPA if they demonstrated the attainment of NAAQS or more stringent state air quality standards. Also, at that time an acceptable method for formulating control strategies was the use of an example region for demonstrating the attainment of the standards.

The example region concept permitted a State to identify the most polluted Air Quality Control Region (AQCR) and adopt control regulations which would be adequate to attain the NAAQS in that region. In using an example region, it was assumed that NAAQS would be attained in the other AQCR's of the State if the control regulations were applied to similar sources. The problem with the use of an example region is that it can result in controls which are more stringent than needed to attain NAAQS, especially in the utilization of clean fuels, for areas of the State where sources would not otherwise contribute to NAAQS violations. For instance, a control strategy based on a particular region or source can result in a regulation requiring 1 percent sulfur oil to be burned state-wide where the use of 3 percent sulfur coal would be adequate to attain NAAQS in some locations.

EPA anticipates that a number of states will use the review findings to assist them in making the decision whether or not to revise portions of their State Implementation Plans. However, it is most important for those States which desire to submit a revised plan to recognize the review's limitations. The findings of this report are by no means conclusive and are neither intended nor adequate to be the sole basis for SIP revisions; they do, however, represent EPA's best judgment and effort in complying with the ESECA requirements. The time and resources which EPA has had to prepare the reports has not permitted the consideration of growth, economics, and control strategy tradeoffs. Also, there has been only limited dispersion modeling data available by which to address individual point source emissions. Where the modeling data for specific sources were found, however, they were used in the analysis.

The data upon which the reports' findings are based are the most currently available to the Federal Government. However, EPA believes that the States possess the best information for developing revised plans. The States have the most up-to-date air quality and emissions data, a better feel for growth, and the fullest understanding for the complex problems facing them in the attainment and maintenance of air quality. Therefore, those States desiring to revise a plan are encouraged to verify and, in many instances, expand the modeling and monitoring data supporting EPA's findings. In developing a suitable plan, it is suggested that States select control strategies which place emissions for fuel combustion sources into perspective with all sources of emissions such as smelters or other industrial processes. States are encouraged to consider the overall impact which the potential relaxation of overly restrictive emissions regulations for combustion sources might have on their future control programs. This may include air quality maintenance, prevention of significant deterioration, increased TSP, NO_x, and HC emissions which occur in fuel switching and other potential air pollution situations such as sulfates.

Although the enclosed analysis has attempted to address the attainment of all NAAQS, most of the review has focused on total suspended particulate matter (TSP) and sulfur dioxide (SO_2) emissions. This is because stationary fuel combustion sources constitute the greatest source of SO_2 emissions and are a major source of TSP emissions.

Part of each State's review was organized to provide an analysis of the SO_2 and TSP emission tolerances within each of the various AQCRs. The regional emission tolerance estimate is, in many cases, EPA's only measure of the "over-cleaning" accomplished by a SIP. The tolerance assessments have been combined in Appendix B with other regional air quality "indicators" in an attempt to provide an evaluation of a region's candidacy for changing emission limitation regulations. In conjunction with the regional analysis, a summary of the State's fuel combustion sources (power plants, industrial sources, and area sources) has been carried out in Appendices C, D, and E.

The State Implementation Plan for West Virginia has been reviewed for the most prevalent causes of over-restrictive fuel combustion limiting regulations. The major findings of the review are:

FOR TOTAL SUSPENDED PARTICULATES, THERE IS LITTLE INDICATION THAT EXISTING FUEL COMBUSTION SOURCE EMISSION LIMITING REGULATIONS ARE OVER-RESTRICTIVE

FOR SULFUR DIOXIDE, THERE IS LITTLE INDICATION THAT EXISTING FUEL COMBUSTION SOURCE EMISSION LIMITING REGULATIONS ARE OVER-RESTRICTIVE

The supportive findings of the SIP review are as follows:

Like many other areas of the nation, high levels of total suspended particulates were found in many of the AQCRs during 1973. Fuel combustion sources contribute a majority of the particulate emissions in many of the AQCRs, therefore a relaxation of existing particulate emission regulations may adversely affect existing air quality.

In many areas within the State, power plants are contributing a large percentage of the sulfur dioxide emissions and any relaxation of the SO_2 emission limits for these sources would have a significant adverse effect on existing air quality. Additional air quality data for sulfur dioxide are needed in most of the AQCRs before any regulation relaxation is considered. Many of the AQCRs are classified priority III for this pollutant and were not required to have air monitors during 1973.

Recent action by the State of West Virginia parallels the intention of Section IV of ESECA. In an attempt to reduce the impact of fuel shortages, and to conserve clean fuel, the State submitted a plan revision which would relax the regulations to permit the maximum discharge of sulfur dioxide to be 45,000 pounds per hour rather than 32,000 pounds per hour from all sources in a given facility. The impact of this change in regulations affects only one large power plant.

2.0 STATE IMPLEMENTATION PLAN REVIEW

2.1 SUMMARY

A revision of fuel combustion source emissions regulations will depend on many factors.

- Does the State have air quality standards which are more stringent than NAAQS?
- Does the State have emission limitation regulations for control of (1) power plants, (2) industrial sources, (3) area sources?
- Did the State use an example region approach for demonstrating the attainment of NAAQS or more stringent State standards?
- Has the State not initiated action to modify combustion source emission regulations for fuel savings; i.e., under the Clean Fuels Policy?
- Are there no proposed Air Quality Maintenance Areas?
- Are there indications of a sufficient number of monitoring sites within a region?
- Is there an expected 1975 attainment date for NAAQS in the State Implementation Plan?
- Based on (1973) air quality data, are there no reported violations of NAAQS?
- Based on (1973) air quality data, are there indications of a tolerance for increasing emissions?
- Are the total emissions from stationary fuel combustion sources proportionally lower than those of other sources?
- Do modeling results for specific fuel combustion sources show a potential for a regulation revision?

The following portion of this report is directed at answering these questions. An AQCR's potential for revising regulations increases when there are affirmative responses to the above.

The initial part of the SIP review report, Section 2 and Appendix A, was organized to provide the background and current situation information for the State Implementation Plan. Section 3 and the remaining Appendices

provide an AQCR analysis which helps establish the overall potential for revising regulations.

Based on an overall evaluation of EPA's current information, AQCR's have been rated as either a good, poor or marginal candidate for revising emission limiting regulations. These ratings which are shown in Table 2-1 were determined by assessing the following criteria:

Good	Poor	Marginal
1) Adequate number of air monitoring sites	1) Violation of NAAQS	1) No air quality data or insufficient number of monitoring sites
2) No NAAQS violations	2) Attainment date for NAAQS later than 1975	2) Inconsistent "indicators"
3) Attainment date of 1975 for NAAQS in the SIP	3) Proposed AQMA	
4) No proposed AQMAs	4) Modeling results show no potential for regulation revision	
5) Modeling results show a potential for regulation revision		

For an AQCR to be rated as a good candidate, all of the criteria listed under "Good" would have to be satisfied. The overriding factor in rating an AQCR as a poor candidate is a violation of either the primary or secondary National Ambient Air Quality Standards during 1973. However, if any of the other conditions listed under "Poor" exists, the AQCR would still receive that rating. The predominant reason for a marginal rating is a lack of sufficient air quality data. In Priority III regions, air monitoring was not required during 1973, therefore, there are little if any data with which to determine the current air quality status. Marginal ratings are also given when there are varying or inconsistent "indicators".

After a candidacy has been given to a region, a follow-up analysis should be conducted depending on the rating. A region that has been indicated to be a good candidate for regulation revision should be examined in more detail by the state and the Regional office of the EPA, including an examination of current air quality, emissions, and fuel use data, with which the state has

more familiarity. If the state feels that clean fuels could be saved in a region rated marginal then an analysis of air quality data that may have become available since this report should be examined. If current data do not indicate a potential for regulation revision then further study would not be warranted. An AQCR that has been indicated to be a poor candidate would not warrant further study unless the state feels that new information has become available indicating that the poor rating is no longer valid.

TABLE 2-1
STATE IMPLEMENTATION PLAN REVIEW
(SUMMARY)

"Indicators"	State W. Va		Huntington Ashland AQCR 103		Cumberland Keyser AQCR 113		Parkersburg Marietta AQCR 179		Steubenville Weirton AQCR 181		Allegheny AQCR 231		Central W. Va. AQCR 232		Eastern Panhandle AQCR 233		Kanawha Valley AQCR 234		North Central W. Va. AQCR 235		Southern W. Va. AQCR 236	
	TSP	SO_2	TSP	SO_2	TSP	SO_2	TSP	SO_2	TSP	SO_2	TSP	SO_2	TSP	SO_2	TSP	SO_2	TSP	SO_2	TSP	SO_2	TSP	SO_2
• Does the State have air quality sta[illegible] which are more stringent than NAAQS?	No	Yes[a]																				
• Does the State have emission limiting regulations for control of:																						
1. Power plants	Yes	Yes																				
2. Industrial sources	Yes	Yes																				
3. Area sources	Yes	Yes																				
• Did the State use an example region approach for demonstrating the attainment of NAAQS or more stringent State standards?	Yes	Yes																				
• Has the State not initiated action to modify combustion source emission regulations for fuel savings; i.e., under the Clean Fuels Policy?	Yes	No[b]																				
• Are there no proposed Air Quality Maintenance Areas?			Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
• Are there indications of a sufficient number of monitoring sites within a region?			Yes	Yes[c]	Yes	Yes[c]	Yes	No	Yes	Yes	e	e	e	e	e	e	Yes	Yes	Yes	e	Yes	e
• Is there an expected 1975 attainment date for NAAQS in the State Implementation Plan?[f]			No	Yes	No	Yes	No	Yes	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	Yes	No	Yes	Yes	Yes
• Based on (1973) Air Quality Data, are there no reported violations of NAAQS ?			No	Yes	No	Yes	No	N.A.	No	No	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	No	Yes	Yes	N.A.	No	N.A.
• Based on (1973) Air Quality Data, are there indications of a tolerance for increasing emissions?			No	Yes	No	Yes	No	N.A.	No	No	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	No	Yes	Yes	N.A.	No	N.A.
• Are the total emissions from stationary fuel combustion sources proportionally lower than those of other sources?			No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No
• Do modeling results for specific fuel combustion sources show a potential for a regulation revision?			N.A.	No	N.A.	Yes	N.A.	No	No	Yes	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	Yes	N.A.	N.A.
• Based on the above indicators, what is the potential for revising fuel combustion source emission limiting regulations?			Poor	Marg.	Poor	Marg.[d]	Poor	Marg.	Poor	Poor	Marg.	Marg.	Marg.	Marg.	Marg.	Marg.	Poor	Marg.	Poor	Marg.	Poor	Marg.

[a] The state has adopted secondary standards for sulfur dioxide.

[b] Relaxing SO_2 emission limits will affect one large power plant.

[c] No monitors in West Virginia portion of AQCR

[d] One power plant was involved in a controversy concerning damage to Christmas trees.

[e] Priority III regions not required to have air monitors until two years after SIP is approved.

[f] Attainment dates are for primary and secondary standards.

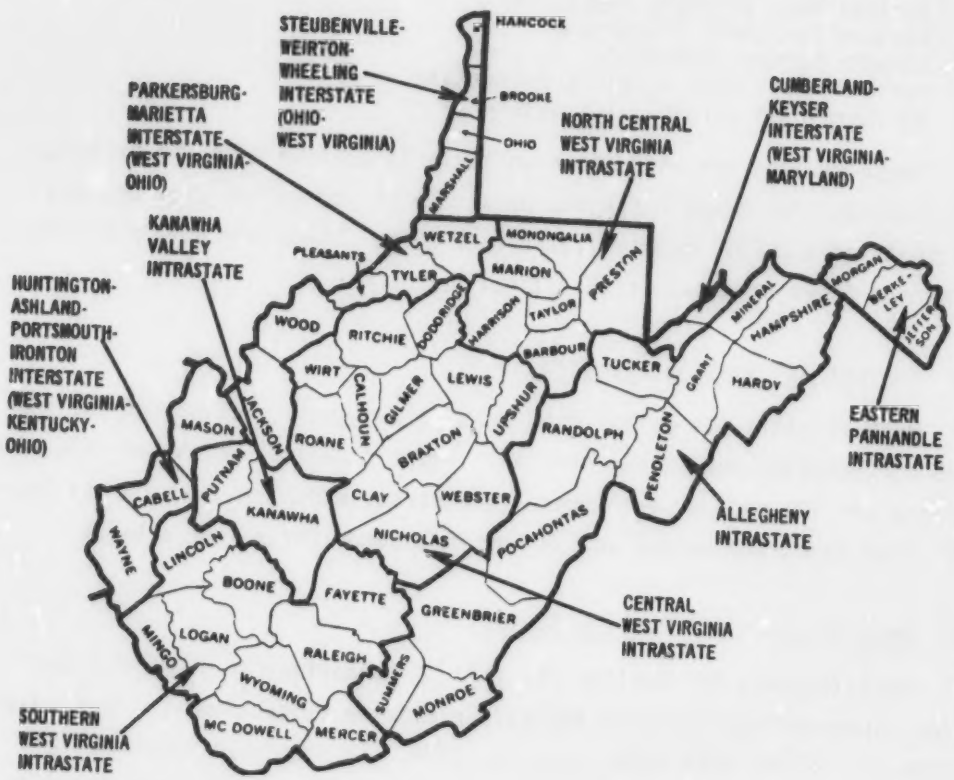

Figure 2-1 WEST VIRGINIA AIR QUALITY CONTROL REGIONS

2.2 AIR QUALITY SETTING - STATE OF WEST VIRGINIA

2.2.1 West Virginia Air Pollution Control Areas

The State of West Virginia has been divided into ten Air Quality Control Regions (AQCR) as follows:

Huntington - Ashland - Portsmouth - Ironton Interstate (Kentucky, Ohio)
Cumberland - Keyser Interstate (Maryland)
Parkersburg - Marietta Interstate (Ohio)
Steubenville - Weirton - Wheeling Interstate (Ohio)
Allegheny Intrastate
Central West Virginia Intrastate
Eastern Panhandle Intrastate
Kanawha Valley Intrastate
North Central West Virginia Intrastate
Southern West Virginia Intrastate

These regions are also shown on Table A-1, along with the priority classifications for total suspended particulates and sulfur dioxide, and an estimate of the 1975 population in each AQCR. There are no Air Quality Maintenance Areas proposed at this time.

2.2.2 Ambient Air Quality Standards

West Virginia has established ambient air quality standards for suspended particulates and sulfur dioxide. These standards which are shown in Table A-2 are the same as the Federal standards, except that the state has established secondary annual and 24-hour standards for sulfur dioxide.

2.2.3 West Virginia Air Quality Status

West Virginia Air Quality for 1973 is summarized in Table A-3 and A-4 for suspended particulates and sulfur dioxide respectively. These data are from the SAROAD data bank, July 28, 1974. It should be noted not all of the air quality data collected by the state are necessarily in the data bank.

Total suspended particulate data are available for seven of the ten Air Quality Control Regions. There are no air monitoring data for the Allegheny, Central West Virginia, and Eastern Panhandle regions. These regions are all classified as Priority III for particulates, and are not

required to establish air monitors until two years after the State Implementation Plan is approved. The Southern West Virginia AQCR is also a Priority III region however air quality data for suspended particulates are available. Table A-3 shows that of the seven regions monitoring particulates, five regions require a significant reduction in the 1973 levels in order to attain air quality standards, while one region requires a minimal reduction, and one region has a tolerance for an increase in ambient levels and still maintain standards. The highest concentration in West Virginia for an annual geometric mean was 73 $\mu g/m^3$, and for the maximum 24-hour average, 475 $\mu g/m^3$, recorded in the Huntington - Ashland - Portsmouth - Ironton region and the Steubenville - Weirton - Wheeling region respectively. Suspended particulate levels are generally consistent with priority classifications as the regions that are reporting air quality violations have a Priority I classification.

Sulfur dioxide is monitored in four of the ten AQCR's, however there are seven regions that are classified Priority III for this pollutant, and again, monitoring was not required in these regions during 1973. As indicated in Table A-3, three regions; the Huntington - Ashland - Portsmouth - Ironton, the Cumberland - Keyser, and the Kanawha Valley, have a tolerance for an increase in 1973 ambient levels and still maintain standards. However, supplemental information as reviewed in Section 2.1 indicates that these regions are only marginal candidates for regulation revision.

2.2.4 West Virginia Emissions Summary

A summary of particulate and sulfur dioxide emissions for each of the regions is presented in Table A-6 and A-7 respectively. These data are from the State Implementation Plan Emission Inventory and are representative of fiscal year 1971. In some cases, data from the "1972 National Emissions Report" June 1974 were used.

Table A-5 is a summary of fuel combustion sources listing the number of power plants and major fuel combustion sources in each region and the percentage of the total emissions in each AQCR that are a result of fuel combustion. As shown on this table, fuel combustion sources account for the majority of

both particulate and sulfur dioxide emissions in several of the regions, indicating that a relaxation in emission regulations may have a significant adverse impact on air quality.

The greatest amount of particulate and sulfur dioxide emissions are found in the Steubenville-Weirton-Wheeling AQCR, which has two power plants and several industrial fuel combustion sources in operation. The Kanawha Valley and the North Central West Virginia AQCR contribute the second highest amount of particulate and sulfur dioxide emissions.

2.3 BACKGROUND ON THE DEVELOPMENT OF WEST VIRGINIA'S CURRENT STATE IMPLEMENTATION PLAN

2.3.1 Control Strategy for Particulate Matter and Sulfur Oxides

The Kanawha Valley Intrastate and Steubenville - Weirton - Wheeling Interstate Regions were designated as the example regions for the development of the control strategies for particulate matter in all Priority I regions (there are no Priority II regions) and for sulfur oxides in Priority I and Priority II regions, respectively. These regions were selected as example regions due to their high emissions, poor air quality, and similarity to the other regions. West Virginia shows attainment and maintenance of the national standards for particulate matter and sulfur oxides through the use of a proportional model. Growth factors, based on EPA data, and planned growth and economic projections were applied to each category of emission sources to determine projected emissions after application of the adopted emission limitations. Since the projected emissions are less than that which were designed to attain the national standards in the example regions, the national standards should be attained in all Priority I regions for particulate matter and in all Priority I and Priority II regions for sulfur oxides. The capability of denying permits for the construction of new sources or the modification of existing sources, the Federal Standards of Performance of New Stationary Sources and the application of the state-wide emission limitations are designed to prevent ambient pollution levels from exceeding secondary standards for sulfur oxides and particulate matter in all regions.

2.4 SPECIAL CONSIDERATIONS

A revision to the West Virginia Implementation Plan was approved on August 12, 1974. This revision relaxes the regulations to permit the maximum discharge of sulfur dioxide to be 45,000 pounds per hour rather than 32,000 pounds per hour from all sources in a given facility. The impact of this change affects only one large power plant.

3.0 CURRENT ASSESSMENTS BASED ON STATE IMPLEMENTATION PLAN REVIEW

The purpose of this section is to evaluate the available information for the State of West Virginia and determine the feasibility of revisions to the SIP which would result in clean fuel conservation. The assessments will be made by AQCR, addressing each type of fuel combustion source: power plants, large industrial and commercial/institutional sources, and area sources. The assessments must be made for each pollutant separately and are made on the basis of seven criteria: (1) 1973 air quality violations; (2) expected NAAQS attainment dates; (3) proposed Air Quality Maintenance Area (AQMA) designations; (4) total emissions; (5) portion of emissions from West Virginia fuel combustion sources; (6) regional tolerance for emissions increase; and (7) pollutant priority classifications. Tables B-1 and B-2 tabulate these criteria for each AQCR for TSP and SO_2, respectively.

Table C-1 shows the 1973 fuel use and sulfur content of the fuel for each power plant. The sulfur content is an average content for the year, as variations of up to 20% are common. This information is from the Federal Power Commission and was used in place of the NEDS data since it is more current. Also shown in this table is the projected fuel use for 1975 for each plant, and the sulfur content of the fuel as required by the State Implementation Plan. Allowable sulfur content determined by modeling results are also shown.[1] There are limitations to be considered in using modeling results, because often assumptions are made in the input to the model, when actual data are not available. Modeling results are presented here as another indicator in assessing the candidacy of a region to revise emission regulations.

Appendix D shows the major industrial fuel combustion sources which were significant emitters of particulates and sulfur dioxide when the emissions inventory was conducted for the West Virginia State Implementation Plan.

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[1] The modeling analysis of the power plants was performed by the Walden Research Division of Abcor, Inc. A single-source and valley model, developed by the Meteorology Laboratory, EPA, was used. The model employs a Gaussian plume model and Briggs plume rise equation. Comments on the use of the model are included in Appendix C.

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3.1 AIR QUALITY CONTROL REGION #103, HUNTINGTON-ASHLAND-PORTSMOUTH-IRONTON (KENTUCKY, OHIO)

3.1.1 Regional Air Quality Assessment

Ambient air levels of total suspended particulates exceeded both the annual and 24 hour secondary standards in the West Virginia portion of this AQCR during 1973 (Table A-3). A significant reduction in these levels is needed in order to meet air quality standards.

Sulfur dioxide levels were below ambient air quality standards (Table A-4) and the data indicate that there is a tolerance for an increase in the 1973 levels, and still maintain air quality standards. All of the SO_2 monitoring sites are located outside of the West Virginia portion of this AQCR, and of these stations, less than half had sufficient data with which to calculate an annual arithmetic mean.

3.1.2 Power Plant Assessment

There is one West Virginia power plant in this AQCR, the Sporn plant in Mason County. Modeling results for this plant indicate that with the projected 1975 fuel use, the sulfur content can remain near the same as that used in 1973 (Table C-1), whereas the SIP allows a slight increase in the content. This plant contributes less than half of the particulate emissions but a large percentage of the sulfur dioxide emissions in the West Virginia portion of the AQCR.

3.1.3 Industrial Source Assessment

As shown in Table D-1, there are three major fuel combustion sources that are emitting over 100 tons per year of particulates and sulfur dioxide. Of the total emissions of these pollutants, point sources account for only a slight percentage of the total.

3.1.4 Area Source Assessment

Fuel use for area sources is presented in Table E-1. Area source fuel combustion in the West Virginia portion of this AQCR accounts for approximately one percent of the total particulate and sulfur dioxide emissions.

3.1.5 Fuel Use Assessment

Total fuel use by the region is presented in Appendix E.

3.2 AIR QUALITY CONTROL REGION #113, CUMBERLAND-KEYSER (MARYLAND)

3.2.1 Regional Air Quality Assessment

Ambient air levels of suspended particulate matter exceeded both the annual and 24-hour secondary standard during 1973 (Table A-3) in this AQCR. However, all six of the monitoring stations for this pollutant are located in the Maryland portion of the AQCR.

Sulfur dioxide levels were below the standard in this region, during 1973 and the data indicate a tolerance for an increase in the ambient levels (Table A-4). As with particulate monitoring, all of the SO_2 monitoring sites are located in Maryland.

3.2.2 Power Plant Assessment

There is one power plant in the West Virginia portion of this AQCR, the Mount Storm plant in Grant County. This plant accounts for a large percentage of the particulate and sulfur dioxide emissions in the West Virginia portion of this AQCR. Modeling results show that in 1975 the sulfur content can be increased slightly from that used in 1973, although the SIP requires a slight reduction (Table C-1). This plant was involved in some controversy during the late 1960's when the emissions from the plant were thought to be damaging some Christmas trees nearby in Maryland. The Virginia Electric and Power Company made an out-of-court settlement for the damages. In light of this situation, sulfur dioxide data need to be evaluated in more detail, before any consideration is given to relaxing emission standards.

3.2.3 Industrial, Commercial, Institutional Source Assessment

There are no major fuel combustion point sources in the West Virginia portion of this AQCR.

3.2.4 Area Source Assessment

Area source fuel combustion contributes less than ten percent of the

particulate emissions and a negligible amount of the sulfur dioxide emissions in the West Virginia portion of this AQCR. Fuel use by area sources is presented in Table E-1.

3.2.5 Fuel Use Assessment

Total fuel use data by the region are presented in Appendix E.

3.3 AIR QUALITY CONTROL REGION #179, PARKERSBURG - MARIETTA (OHIO)

3.3.1 Regional Air Quality Assessment

There were insufficient air monitoring data for suspended particulates collected in this region to determine an annual geometric mean for 1973, however, the second highest 24-hour value of 151 $\mu g/m^3$ barely exceeded the secondary standard of 150 $\mu g/m^3$. A minimal reduction in the 1973 ambient levels is required to achieve standards for this pollutant.

The air quality status of sulfur dioxide is difficult to assess since there are no 1973 data available for either the 24-hour bubbler or continuous monitor.

3.3.2 Power Plant Assessment

There is one West Virginia power plant in this AQCR, the Willow Island plant in Pleasants County. This plant has been burning high sulfur coal, 4.5% in 1972 and 3.72% in 1973. Modeling results show that in 1975, the sulfur content will have to be reduced to 1.5% which is also required by the SIP to maintain air quality standards in the vicinity of the plant (Table C-1). This plant contributes a significant amount of both the particulate and sulfur dioxide emissions in the West Virginia portion of this AQCR.

3.3.3 Industrial Source Assessment

There are five major West Virginia fuel combustion sources in this AQCR which are listed in Table D-1. These sources contribute approximately one-third of the particulate and sulfur dioxide emissions in the West Virginia portion of the AQCR.

3.3.4 Area Source Assessment

Area source fuel combustion contributes approximately two percent of the particulate and sulfur dioxide emissions within the West Virginia portion of this AQCR. Fuel use by area sources is shown in Table E-1.

3.3.5 Fuel Use Assessment

Fuel use data by the region are presented in Appendix E.

3.4 AIR QUALITY CONTROL REGION #181, STEUBENVILLE-WEIRTON-WHEELING (OHIO)

3.4.1 Regional Air Quality Assessment

Ambient levels of total suspended particulates in this AQCR exceeded both the annual and 24-hour secondary standards in 1973. Of the thirty-six monitoring stations in this region, sixteen stations exceeded the annual standard, and twenty-six stations exceeded the 24-hour standard. There were insufficient data in the West Virginia portion of the AQCR to calculate an annual geometric mean, however, the secondary 24-hour standard was exceeded at five of the twelve West Virginia monitoring sites. A significant reduction in 1973 ambient levels is required at attain air quality standards in this region (Table A-3).

Ambient levels of sulfur dioxide in this region exceeded both the annual and 24-hour standard during 1973, and occurred in the Ohio portion of the AQCR. A significant reduction in the 1973 ambient air levels, with a corresponding reduction in SO_2 emissions is needed to meet air quality standards. (Table A-4)

3.4.2 Power Plant Assessment

There were three power plants operating in the West Virginia portion of this AQCR during 1973, all of which have been using high sulfur content coal. (Table C-1). The Windsor plant in Brooke County burned 3.68% sulfur coal in 1972 and 3.44% in 1973, and has since ceased operations. There are two power plants in Marshall County, the Kammer and Mitchell Plants. The Kammer plant which used 4.03% sulfur coal in 1973 can burn 4.0% coal in 1975 according to modeling results, whereas the SIP requires 1.7% to maintain

air quality standards in the vicinity of the plant. The Mitchell plant burned 3.37% sulfur coal during 1973, slightly less than the 3.69% allowed by modeling results, however the SIP requires 1.6% sulfur coal at this plant. Electricity generation accounts for approximately one-third of the particulate emissions, and over three-fourths of the sulfur dioxide emissions in the West Virginia portion of this AQCR.

3.4.3 Industrial Source Assessment

There are several major West Virginia fuel combustion sources in this region which are listed in Table D-1. This is a highly industrialized region in which point source fuel combustion accounts for approximately 111,000 tons per year of particulate emissions and 123,000 tons of sulfur dioxide emissions.

3.4.4 Area Source Assessment

Area source fuel combustion accounts for approximately one percent of the particulate and sulfur dioxide emissions in the West Virginia portion of this AQCR. Fuel use by area sources is shown in Table E-1.

3.4.5 Fuel Use Assessment

Fuel use by the region is presented in Appendix E.

3.5 AIR QUALITY CONTROL REGION #231, ALLEGHENY

3.5.1 Regional Air Quality Assessment

There were no monitoring data for either suspended particulates or sulfur dioxide in this AQCR for 1973. This is a Priority III region for both of these pollutants, and as previously mentioned, air monitors were not required during 1973.

3.5.2 Power Plant Assessment

There are no power plants in this Air Quality Control Region.

3.5.3 Industrial Source Assessment

There is one major fuel combustion source in this region which is listed in Table D-1. The emissions from this source are not significant in

comparison to the regional total as it accounts for approximately one percent of the particulate emissions, and six percent of the sulfur dioxide emissions.

3.5.4 Area Source Assessment

Area source fuel combustion accounts for only one percent of the particulate emissions, but a significant amount of the sulfur dioxide emissions in this region. Total fuel use for area sources is shown in Table E-1. There are almost 100,000 tons of bituminous coal containing 2.0% sulfur and 10% ash being burned in this region by residential sources only. Over 90% of the distillate oil burned in this region is by residential sources, however in most cases it is impractical for these sources to switch to coal if they were allowed to do so. A substantial percentage of natural gas used in this area is burned by industrial and commercial sources thereby affording some possibility of saving this fuel if fuel switching is allowed under revised regulations. However, it does not seem feasible to relax emission regulations for area sources only.

3.5.5 Fuel Use Assessment

Fuel use by the region is shown in Appendix E.

3.6 AIR QUALITY CONTROL REGION #232, CENTRAL WEST VIRGINIA

3.6.1 Regional Air Quality

There were no air monitoring sites for either suspended particulates or sulfur dioxide in this AQCR during 1973 as shown in Tables A-3 and A-4. Again this is a Priority III region for these pollutants, and air monitors were not required during 1973.

3.6.2 Power Plant Assessment

There are no power plants in this Air Quality Control Region.

3.6.3 Industrial, Commercial, Institutional Source Assessment

There are no major fuel combustion point sources in this Air Quality Control Region.

3.6.4 Area Source Assessment

Area source fuel combustion contributes approximately three percent of the particulate emissions, and seventeen percent of the sulfur dioxide emissions in this region. Total fuel use by area sources is shown in Table E-1. All of the coal used in this region was by residential sources only. The predominant fuel used in this region by industrial and commercial sources is natural gas as over 60% of this fuel is consumed by these sources. If regulations are revised, allowing a fuel switch, there is a possibility of saving a significant amount of this fuel if changes in fuel burning equipment are economically feasible by these sources. Approximately 55,000 barrels of distillate oil containing 0.3% sulfur are burned in this region, however it is usually impractical for these sources to change to coal although a switch to higher sulfur oil may be possible. Again, relaxation of emission regulations for area sources only, does not seem feasible.

3.6.5 Fuel Use Assessment

Fuel use by the Region is shown in Appendix E.

3.7 AIR QUALITY CONTROL REGION #233, EASTERN PANHANDLE

3.7.1 Regional Air Quality Assessment

As with the previous two air quality control regions, there are no monitoring sites for either suspended particulates or sulfur dioxide located in this region. The region is classified Priority III for these pollutants and air monitors were not required during 1973.

3.7.2 Power Plant Assessment

There are no power plants in this Air Quality Control Region.

3.7.3 Industrial, Commercial, Institutional Source Assessment

There are no major fuel combustion point sources in this Air Quality Control Region.

3.7.4 Area Source Assessment

Area source fuel combustion accounts for only a slight amount of the

particulate emissions but a large percentage of the SO_2 emissions in this region. Total fuel use by area sources is shown in Table E-1. Residential sources account for all of the bituminous coal and 94% of the distillate oil used in this region. A switch from oil to coal by these sources is usually impractical because of economic considerations, however, a higher sulfur content distillate oil could be used if regulations were relaxed. Approximately 77% of the natural gas used in this region is by industrial sources, thereby creating a potential for saving this fuel if fuel switching was practical.

3.7.5 Fuel Use Assessment

Fuel use by the Region is shown in Appendix E.

3.8 AIR QUALITY CONTROL REGION #234, KANAWHA VALLEY

3.8.1 Regional Air Quality Assessment

Ambient levels of total suspended particulate exceeded both the annual and 24-hour primary and secondary standard during 1973. The annual standard was exceeded at two of the thirteen monitoring stations, and the 24-hour standard was exceeded at six stations (Table A-3). A significant reduction in the 1973 levels is needed to meet air quality standards.

Ambient air levels of sulfur dioxide were not in violation of the 24-hour standards during 1973 and the data shows that there is a tolerance for a significant increase in ambient levels and still maintain air quality standards (Table A-4). However, in the past, this region has had high sulfur dioxide levels, and further analysis of sulfur dioxide data is needed.

3.8.2 Power Plant Assessment

There are three power plants in this region, all of them located in Kanawha County. The Cabin Creek and Amos plants burned coal containing a higher sulfur content than allowed by the SIP, while at the Kanawha River plant the coal sulfur content was slightly below SIP requirements. There are no modeling data available to determine the allowable sulfur content of the fuel that may be used at these plants. The total sulfur dioxide emissions from these three plants during 1973 amounted to approximately 222,000 tons.

3.8.3 Industrial Source Assessment

There are several major fuel combustion sources in this region which are listed in Table D-1. Point source fuel combustion accounts for approximately 93,000 tons of particulate emissions and 84,000 tons of sulfur dioxide emissions per year.

3.8.4 Area Source Assessment

Area source fuel combustion accounts for less than one percent of the particulate and sulfur dioxide emissions in this region. There is a substantial amount of natural gas used in this region and almost 60% of it is used by industrial and commercial sources. Residential sources acoount for all of the coal use, and approximately one third of the distillate oil and natural gas use. Total fuel use by area sources are shown in Table E-1.

3.8.5 Fuel Use Assessment

Fuel use data are presented in Appendix E.

3.9 AIR QUALITY CONTROL REGION #235, NORTH CENTRAL WEST VIRGINIA

3.9.1 Regional Air Quality Assessment

Ambient levels of particulate matter met the 24-hour secondary standard for particulate matter during 1973, however, there were insufficient data to determine an annual mean. The second highest reading of 139 $\mu g/m^3$ for a 24-hour average permits a slight increase in the ambient levels and still maintain air quality standards.

There are no sulfur dioxide air quality data available for this AQCR, as air monitors were not required during 1973 since this is a Priority III region for sulfur dioxide.

3.9.2 Power Plant Assessment

There are three power plants in this AQCR which contribute approximately one half of the particulate emissions, and over ninety percent of the sulfur dioxide emissions in the region. The Albright plant in Preston County burned

2.02% sulfur coal during 1973, slightly higher than the 1.77% required by the SIP in 1975. Modeling results indicate the allowable sulfur content to be 1.89% for this plant. The Fort Martin plant burned 2.47% sulfur coal during 1973, while the SIP requires 2.09% in 1975. The Rivesville plant in Marion County must make a significant reduction in sulfur content in order to comply with the SIP in 1975. This plant burned 3.47% sulfur coal during 1973, while only 1.99% is allowed by the SIP. Modeling analysis indicates that a reduction to 2.09% is required .

3.9.3 Industrial Source Assessment

There is one major fuel combustion source in this region which is listed in Table D-1. The emissions from this plant are not significant compared to the total as it accounts for less than one percent of the particulate and sulfur dioxide emissions for the region.

3.9.4 Area Source Assessment

Area source fuel combustion accounts for only a small percentage of the particulate and sulfur dioxide emissions in this region.

3.9.5 Fuel Use Assessment

Fuel use by this region is presented in Appendix E.

3.10 AIR QUALITY CONTROL REGION #236 - SOUTHERN WEST VIRGINIA

3.10.1 Regional Air Quality Assessment

Total suspended particulate levels exceeded the 24-hour secondary standard during 1973. There were insufficient data available to determine an annual mean for this region which is classified Priority III for this pollutant as well as for sulfur dioxide. There are no sulfur dioxide data available for this region as air monitors were not required during 1973.

3.10.2 Power Plant Assessment

There are no power plants in this region.

3.10.3 Industrial, Commercial, Institutional Source Assessment

There are no major fuel combustion point sources in this region.

3.10.4 Area Source Assessment

Area source fuel combustion accounts for an estimated seventy percent of the particulate emissions and twelve percent of the sulfur dioxide emissions in this region. Residential sources account for all of the coal used in this region. There is a considerable amount of natural gas used in this region by area sources, however, it is usually impractical for these sources to switch fuels, thereby affording little potential for conserving this fuel.

3.10.5 Fuel Use Assessment

Fuel use by the region is shown in Appendix E.

APPENDIX A

STATE IMPLEMENTATION PLAN BACKGROUND

TABLE A-1. West Virginia Air Pollution Control Areas

Air Quality Control Region	Federal Number	Priority Classification[a] Particulates	SOx	NO_x	Population 1975 (Millions)
Huntington - Ashland - Portsmouth Ironton (Ky. Ohio)	103	I	III	III	0.63
Cumberland - Keyser (Md.)	113	I	I	III	0.23
Parkersburg - Marietta (Ohio)	179	I	II	III	0.29
Steubenville - Weirton Wheeling (Ohio)	181	I	I	III	0.49
Allegheny	231	III	III	III	0.17
Central West Virginia	232	III	III	III	0.14
Eastern Panhandle	233	III	III	III	0.07
Kanawha Valley	234	I	III	III	0.28
North Central West Virginia	235	I	III	III	0.26
Southern West Virginia	236	III	III	III	0.38

[a]Criteria Based on Maximum Measured (or Estimated) Pollution Concentration in Area

Priority	I	II	III
	Greater than	From - To	Less than
Sulfur oxide:			
Annual arithmetic mean	100	60-100	60
24-hour maximum	455	260-455	260
Particulate matter:			
Annual geometric mean	95	60-95	60
24-hour maximum	325	150-325	150

TABLE A-2

WEST VIRGINIA AMBIENT AIR QUALITY STANDARDS (ug/m^3)

		Total Suspended Particulate		Sulfur Oxides			Nitrogen Oxides
		Annual	24-Hour	Annual	24-Hour	3-Hour	Annual
Federal	Primary	75	260[a]	80	365[a]	---	100
	Secondary	60	150[a]	--	---	1300[a]	100
State	Primary	75	260[a]	80	365[a]	---	100
	Secondary	60	150[a]	60	260[a]	1300[a]	---

[a] Not to be exceeded more than once per year

TABLE A-3

WEST VIRGINIA AIR QUALITY STATUS, TSP[a]

Air Quality Control Region	No. Stations Reporting	TSP Concentration (ugm/m^3) Highest Reading Annual	Highest Reading 24-Hr	2nd Highest Reading 24 Hr	Number of Stations Exceeding Ambient Air Quality Standards: Primary Annual	Primary 24-Hr[c]	Secondary Annual	Secondary %	Secondary 24-Hr[c]	Secondary %	%Reduction Required to Meet Standards[f]
Huntington-Ashland-Portsmouth[b, d]	40	96	349	239	5	0	13	33	12	33	+ 53
Cumberland-Keyser[b, e]	6	85	423	185	2	0	5	83	4	66	+ 44
Parkersburg-Marietta[b]	3	--	268	151	-	0	--	--	1	33	+ 1
Steubenville-Weirton-Wheeling[b, d]	36	187	621	574	15	11	16	44	26	72	+ 80
Allegheny	0	--	--	--	--	--	--	--	--	--	---
Central West Virginia	0	--	--	--	--	--	--	--	--	--	---
Eastern Panhandle	0	--	--	--	--	--	--	--	--	--	---
Kanawha Valley	13	102	501	318	2	2	2	15	6	46	+ 58
North Central West Virginia	5	---	186	139	-	0	-	--	0	0	- 9
Southern West Virginia	2	---	326	319	-	1	-	--	2	100	+ 58

[a] 1973 Air Quality in National Air Data Bank, July 28, 1974

[b] Interstate

[c] Violations based on more than one reading in excess of standard

[d] Highest and second highest reading recorded in Ohio portion of AQCR

[e] No monitoring stations in W. Va. portion of AQCR

[f] Formula:

$$\frac{(\text{2nd Highest 24 Hr} - \text{24 Hr Secondary Standard})}{\text{2nd Highest 24-Hr} - \text{Background}} \times 100, \quad \frac{(\text{Annual} - \text{Annual Secondary Standard})}{\text{Annual} - \text{Background}} \times 100$$

Background: 28 ug/m^3

TABLE A-4

WEST VIRGINIA AIR QUALITY STATUS, SO_x[a]

Air Quality Control Region	No. Stations 24 Hr	Reporting Cont.	SO_2 Concentration (ugm/m^3) Highest Reading		2nd Highest Reading	Number of Stations Exceeding Ambient Air Quality Standards Primary				Secondary	% Reduction Required to Meet Standards[f]
			Annual	24-Hr	24-Hr	Annual	%	24-Hr[c]	%	3-Hr[c]	
Huntington-Ashland-Portsmouth[b, d]	17	1	28	429	178	0	0	0	0	0	- 105
Cumberland-Keyser[b, d]	6	2	28	562	101	0	0	0	0	0	- 186
Parkersburg-Marietta[b]	0	0	--	---	---	-	-	-	-	-	-
Steubenville-Weirton-Wheeling[b, e]	16	1	106	432	403	1	6	4	25	-	+ 25
Allegheny	0	-	--	---	---	-	-	-	-	-	-
Central West Virginia	0	0	--	---	---	-	-	-	-	-	-
Eastern Panhandle	0	0	--	---	---	-	-	-	-	-	-
Kanawha Valley	8	0	39[g]	228	149	-	-	0	0	-	- 105
North Central West Virginia	0	-	--	---	---	-	-	-	-	-	-
Southern West Virginia	0	0	--	---	---	-	-	-	-	-	-

[a] 1973 Air Quality Data in National Air Data Bank, July 28, 1974

[b] Interstate

[c] Violations based on more than one reading in excess of standard

[d] No monitoring stations located in West Virginia

[e] Highest and second highest readings recorded in Ohio portion of AQCR

[f] Formula:

$$\frac{(\text{2nd Highest 24 Hr} - \text{24 Hr Secondary Standard})}{\text{2nd Highest 24-Hr} - \text{Background}} \times 100, \quad \frac{(\text{Annual} - \text{Annual Secondary Standard})}{\text{Annual} - \text{Background}} \times 100$$

[g] From Fiscal Year 1973 Annual Report , West Virginia Air Pollution Control Commission

TABLE A-5

WEST VIRGINIA FUEL COMBUSTION SOURCE SUMMARY

Air Quality Control Region	Power Plants[a]	Other Fuel Combustion Plant Sources[b]		Area Sources[c]	Total Emissions[d] (10^3Tons/Year)		% West Virginia Emissions From Fuel Combustion Sources	
		TSP	SO_2		TSP	SO_2	TSP	SO_2
Huntington-Ashland-Portsmouth-Ironton[e]	1	3	3	3	82.5	103.4	48	98
Cumberland-Keyser[e]	1	0	0	2	3.3	168.6	100	99
Parkersburg-Marietta[e]	1	5	5	5	38.5	135.4	76	94
Steubenville-Weirton-Wheeling[e]	2	7	8	4	195.0	624.0	89	98
Allegheny	0	1	1	11	48.0	4.9	4	96
Central West Virginia	0	0	0	12	15.6	14.4	4	17
Eastern Panhandle	0	0	0	3	36.1	1.6	1	88
Kanawha Valley	3	7	8	3	147.5	331.5	79	92
North Central West Virginia	3	1	1	6	121.4	349.8	55	95
Southern West Virginia	0	0	0	9	3.3	72.5	70	12
TOTAL	11	24	26	58	691.2	1806.1		

[a] Plants in West Virginia

[b] Sources emitting 100 tons or more per year of either particulates or sulfur dioxide

[c] West Virginia Counties

[d] AQCR Total

[e] Interstate

TABLE A-6

WEST VIRGINIA PARTICULATE EMISSIONS SUMMARY[a]

Air Quality Control Region	Total Emissions[b] (10^3 Tons/Yr)	Electricity Generation		Point Source Fuel Combustion		Area Source Fuel Combustion	
		(10^3 Tons/Yr)	%	(10^3 Tons/Yr)	%	(10^3 Tons/Yr)	%
Huntington-Ashland-Portsmouth-Ironton[c]	82.5	37.0	45	1.4	2	0.6	1
Cumberland-Keyser[c]	3.3[d]	3.0[d]	91	0	-	0.3	9
Parkersburg-Marietta[c]	38.5	14.3	37	14.2	37	0.7	2
Steubenville-Weirton-Wheeling[c]	195.0	60.2	31	111.5	57	1.4	1
Allegheny	48.0	0	--	0.5	1	1.5[e]	3
Central West Virginia	15.6	0	--	0	-	0.7[e]	4
Eastern Panhandle	36.1	0	--	0	0	0.4[e]	1
Kanawha Valley	147.5	23.0[f]	16	93.3	63	0.7	-
North Central West Virginia	121.4	61.8	51	0.5	-	4.7	4
Southern West Virginia	3.3[e]	0	--	0	-	2.3[e]	70

[a] Data are from West Virginia SIP Emission Inventory unless otherwise noted. Emissions for interstate regions are for the West Virginia portion only.

[b] Includes emissions from all sources

[c] Interstate AQCR

[d] 1973 emissions

[e] Data from 1972 National Emissions Report, EPA, June 1974

[f] 1973 emissions from three power plants

TABLE A-7

WEST VIRGINIA SULFUR DIOXIDE EMISSIONS SUMMARY[a]

Air Quality Control Region	Total Emissions[d] (10^3 Tons/Yr)	Electricity Generation (10^3 Tons/Yr)	%	Point Source Fuel Combustion (10^3 Tons/Yr)	%	Area Source Fuel Combustion (10^3 Tons/Yr)	%
Huntington-Ashland-Portsmouth Ironton[c]	103.4	98.7	95	2.5	2	1.0[d]	1
Cumberland-Keyser[c]	168.6	166.6	99	0	--	0.5	--
Parkersburg-Marietta[c]	135.4	85.9	63	37.4	28	3.2	2
Steubenville-Weirton-Wheeling[c]	624.0	478.2	77	123.7	20	5.9	1
Allegheny	4.9[d]	0	--	0.3	6	4.4[d]	90
Central West Virginia	14.4	0	--	0	--	2.4[d]	17
Eastern Panhandle	1.6	0	--	0	--	1.4[d]	88
Kanawha Valley	331.5	222.0[e]	67	84.3	25	1.4	--
North Central West Virginia	349.8	329.0	94	0.6	--	3.7[d]	1
Southern West Virginia	72.5	0	--	0	--	8.4	12

[a] Data are from West Virginia SIP Emission Inventory unless otherwise noted. Emissions for interstate regions are for the West Virginia portion only.

[b] Includes emissions from all sources

[c] Interstate AQCR

[d] Data from 1972 National Emissions Report, EPA, June 1974

[e] 1973 emissions from three power plants

TABLE A-8

WEST VIRGINIA AQCR REQUIRED EMISSION REDUCTION[a]

Air Quality Control Region	Required Particulate Emission Reduction		Required SO_2 Emission Reduction	
	%	10^3 tons/year	%	10^3 tons/year
Huntington-Ashland-Portsmouth	+53	+44.0	-105	-108.6
Cumberland-Keyser	+44	+ 1.5	-186	-313.6
Parkersburg-Marietta	+ 1	+ 0.4	N.D.	N.D.
Steubenville-Weirton-Wheeling	+80	+156.0	+ 25	+156
Allegheny	N.D.	N.D.	N.D.	N.D.
Central West Virginia	N.D.	N.D.	N.D.	N.D.
Eastern Panhandle	N.D.	N.D.	N.D.	N.D.
Kanawha Valley	+58	+85.6	-105	-348.1
North Central West Virginia	- 9	-10.9	N.D.	N.D.
Southern West Virginia	+58	+ 1.9	N.D.	N.D.

[a] Based on a proportional change of emissions to air quality (1973)

[b] Interstate

N.D. - No air quality data.

TABLE A-9

SUMMARY OF FUEL COMBUSTION EMISSION REGULATIONS

I. PARTICULATE MATTER (lbs/10^6BTU)

a. Electric power plants

Total design heat input (10^6BTU/Hr) x 0.05 not to exceed 1200 lbs/Hr.

b. Industrial fuel fired furnaces, cyclone furnaces, gas-fired, and liquid-fuel-fired units.

Total design heat input (10^6BTU/Hr) x 0.09 not to exceed 900 lbs/Hr.

II. SULFUR OXIDES (lbs/10^6BTU)

A. West Virginia priority I and priority II regions

1. Electric power plants

a. By June 30, 1975

Total design heat input (10^6BTU/Hr) x 2.7

b. By June 30, 1978

Total design heat input (10^6BTU/Hr) x 2.0 not to exceed 45,000 lbs/Hr.

2. All other fuel combustion units

a. By June 30, 1975

Total design heat input (10^6BTU/Hr) x 3.1

b. By June 30, 1978

Total design heat input (10^6BTU/Hr) x 2.3 Not to exceed 8,000 lbs/Hr.

B. Region IV, Kanawha Valley Air Quality Control Region - Effective January 1, 1973

1. Electric power Plants

Total design heat input (10^6BTU/Hr) x 1.6 not to exceed 45,000 lbs/Hr.

2. All other fuel combustion units

Total design heat input (10^6BTU/Hr) x 1.6 not to exceed 5,500 lbs/Hr.

C. All other priority III Regions

1. Electric power plants and all other units

Total design heat input (10^6BTU/Hr) x 3.2

APPENDIX B

REGIONAL ASSESSMENT

TABLE B-I

REGIONAL INDICATORS FOR REVISION OF TSP REGULATIONS

Air Quality Control Region		Air Quality # Stations	Air Quality # Of Stations In Violation	Expected Attainment Date	TSP Emissions (10^3 Tons/Yr)	% Emissions From W. Va. Fuel Combustion	Emission Reduction Req'd for NAAQS (10^3 Tons/Yr)	TSP Priority
Huntington-Ashland-Portsmouth	103 [c]	40	12	6/75[a]	82.5	48	+ 44.0	I
Cumberland-Keyser	113	6	5	6/75[a]	3.3	100	+ 1.5	I
Parkersburg-Marietta	179	3	1	6/75[a]	38.5	76	+ 0.4	I
Steubenville-Weirton-Wheeling	181	36	26	6/75[a]	195.0	89	+156.0	I
Allegheny	231	0	-	b	48.0	4	N.D.	III
Central West Virginia	232	0	-	b	15.6	4	N.D.	III
Eastern Panhandle	233	0	-	b	36.1	1	N.D.	III
Kanawha Valley	234	13	6	6/75[a]	147.5	79	+ 85.6	I
North Central West Virginia	235	5	0	6/75[a]	121.4	55	- 10.9	I
Southern West Virginia	236	2	2	b	3.3	70	+ 1.9	III

a. Attainment date is for Primary Standard. Attainment date for Secondary Standard is 6/77

b. Air Quality below standard at time of classification.

N.D. No air quality data available.

TABLE B-2

REGIONAL INDICATORS FOR REVISION OF SO_2 REGULATIONS

Air Quality Control Region		Air Quality # Stations	Air Quality # Of Stations In Violation	Expected Attainment Date	SO_2 Emissions (10^3 Tons/Yr)	% Emissions From W. Va. Fuel Combustion	Emission Reduction Req'd for NAAQS (10^3 Tons/Yr)	SO_2 Priority
Huntington-Ashland-Portsmouth	103	18	0	b	103.4	98	-108.6	III
Cumberland-Keyser	113	8	0	6/75[a]	168.6	99	-313.6	I
Parkersburg-Marietta	179	0	-	6/75[a]	135.4	94	N.D.	II
Steubenville-Weirton-Wheeling	181	17	5	6/75[a]	624.0	98	+156	I
Allegheny	231	0	-	b	4.9	96	N.D.	III
Central West Virginia	232	0	-	b	14.4	17	N.D.	III
Eastern Panhandle	233	0	-	b	1.6	88	N.D.	III
Kanawha Valley	234	8	0	b	331.5	92	-348.1	III
North Central West Virginia	235	0	0	b	349.8	95	N.D.	III
Southern West Virginia	236	0	0	b	72.5	12	N.D.	III

a. Attainment date is for Primary Standard. Attainment date for Secondary Standard is 6/78

b. Air Quality levels below standard at time of classification.

N.D. No data available.

APPENDIX C

POWER PLANT ASSESSMENT

TABLE C-1

WEST VIRGINIA POWER PLANT ASSESSMENT[a]

Air Quality Control Region	Plant	Capacity (MW) 1973 / 1975	Fuel Use 1973 Type % Sulfur	Fuel Use 1973 Annual Quantity[b]	Fuel Use 1975 Type Quantity[b]	SIP % S	Modeling[c] % S
Huntington-Ashland-Portsmouth-Ironton	Sporn	1105.59 1105.59	Coal 1.34% S	2341.61	Coal 2805	1.77	1.4
Cumberland-Keyser	Mount Storm	1695.47 1695.47	Coal 1.96% S	2606.0	Coal 4598	1.6	2.3
Parkersburg-Marietta	Willow Island	215.0 215.0	Coal 3.72% S	605.64	Coal 725	1.47	1.5
Steubenville-Weirton-Wheeling	Windsor	300.0 300.0	Coal 3.44% S	119.83	Coal 608	1.53	---
	Kammer	712.5 712.5	Coal 4.03% S	1510.79	Coal 1511	1.6	4.0
	Mitchell	1632.6 1632.6	Coal 3.37% S	3776.78	Coal 3266	1.53	3.69
Kanawha Valley	Cabin Creek	273.5 273.5	Coal 1.19% S	339.29	Coal 292	0.98	---
	Kanawha River	439.4 439.4	Coal 0.85% S	1134.09	Coal 1320	0.88	---
	Amos	1632.6 2932.6	Coal[d] 1.13% S	3114.8	----	0.95	---
			Oil[d]	122.5			
North Central West Virginia	Albright	278.25 278.25	Coal 2.02% S	771.65	Coal 993	1.77	1.89
	Fort Martin	1152.0 1152.0	Coal 2.47% S	2680.8	Coal 2579	2.09	3.09

TABLE C-1 (cont.)

Air Quality Control Region	Plant	Capacity (MW) 1973 1975	Fuel Use 1973 Type % Sulfur	Fuel Use 1973 Annual Quantity[b]	Fuel Use 1975 Type	Fuel Use 1975 Quantity[b]	SIP % S	Modeling % S
North Central West Virginia (cont.)	Rivesville	174.75 174.75	Coal 3.47% S	475.0	Coal	455	1.99	2.09

[a] Data from Federal Power Commission.

[b] Coal is in 10^3 tons, oil is in 10^3 barrels.

[c] The modeling results presented in this table assumed a 75 $\mu g/m^3$ contribution from sources other than the power plants. These modeling results should be substantiated with actual air quality measurements and qualified.

[d] Fuel use is for 1972.

ADDENDUM TO APPENDIX C

USE AND LIMITATIONS OF MODELING ANALYSIS DATA[a]

1. The data inputs for the modeling have been extracted from the appropriate FPC Form 67 and the most representative meteorological data available. However, to calculate the occurrence of the highest 24-hour concentration, assumptions as to the daily emission rate are necessary. The results of the modeling exercise provide a range of the most probable maximum concentration.

2. It should be recognized that time and data constraints are such that the model predictions are useful but not omniscient. There are no data available, in general, to "validate" the model. Therefore, all relevant data, including hard data on actual daily plant operations, should be obtained, reviewed, and evaluated. In this way, the modeling results can be used as a logical part of the entire decision-making framework, not as an arbitrary, dogmatic absolute "answer", divorced from the real situation involved. In some cases it will be necessary to adjust the model's predictions based upon more complete and detailed information on a particular plant's operations.

3. Results of these evaluations are not intended to be used in any legal actions, including both public hearing and court proceedings. The very nature of atmospheric dispersion modeling is such that results are not suitable to legally prove (or disprove) a particular modeling result. The assumptions and judgments necessarily involved in modeling tend to mitigate against proof in a legal sense.

4. The best use of the data is in negotiations with states or sources in trying to establish a rational course of action to be followed with reasonable assurance that the air quality impact will be as indicated by the model.

[a] Extracted from comments by the Monitoring and Data Analysis Division, OAQPS

APPENDIX D

INDUSTRIAL FUEL COMBUSTION SOURCE LISTING

TABLE D-1

MAJOR INDUSTRIAL FUEL COMBUSTION SOURCES[a]

Air Quality Control Region	Source	Emission (Tons/Yr) Part.	Emission (Tons/Yr) SO_x
Huntington-Ashland-Portsmouth-Ironton	Chemetron Corp.	741	861
	C & O Railway	308	744
	Novamont Corp.	270	739
Parkersburg-Marietta	E. I. DuPont	969	11725
	Union Carbide	861	9361
	American Cyanamid	3209	6830
	FMC Corp.	8524	6710
	Quaker State Oil	664	2733
Steubenville-Weirton-Wheeling	PPG	44375	55957
	Weirton Steel	51056	42260[b]
	Allied Chemical	804	12784
	Wheeling Pittsburg Steel (Follansbee)	5944	4910[c]
	Koppers	2274	3523
	Triangle Conduit & Cable	546	1623
	Wheeling Pittsburg Steel (Benwood)	913	1258
	Banner Fibreboard	3	145
Allegheny	B & O Railroad	406	260
Kanawha Valley	Union Carbide (Institute)	9150	20334

TABLE D-1 (cont.)

Air Quality Control Region	Source	Emission (Tons/Yr) Part.	Emission (Tons/Yr) SO_x
Kanawha Valley (cont.)	Union Carbide (South Charleston)	9921	15942
	E. I. DuPont	1843	13369
	FMC (South Charleston)	4426	13013
	Union Carbide (Alley)	49921	12514
	FMC-Viscose (NITRO)	17040	4141
	Monsanto	840	4131
	Union Carbide (Tech. Center)	96	897
North Central West Virginia	B & O Railroad	546	564

[a] Sources emitting 100 tons or more per year of either particulates or sulfur oxides. Data are from SIP Emission Inventory. Sources are listed in decreasing order of SO_x emissions.

[b] Includes 1,020 tons from coke oven gas, 2438 tons from fuel oil, and 38802 tons from coal combustion.

[c] Includes 3443 tons from coal, and 1467 tons from coke oven gas combustion

APPENDIX E

AQCR FUEL USE

TABLE E-1

FUEL USE SUMMARY [a]

Air Quality Control Region	Coal (10^3 Tons)		Oil (10^3 Barrels)		Gas (10^6 cu. ft.)	
	Anthracite	Bituminous	Residual	Distillate	Natural	Process
Huntington-Ashland-Portsmouth Ironton						
Area Sources	4	179	121	1389	51320	0
Point Sources	0	8327	227	560	7391	9900
Total	4	8506	348	1949	58711	9900
Cumberland-Keyser						
Area Sources	73	22	354	938	10750	0
Point Sources	0	3443	871	0.4	3452	0
Total	73	3465	1225	938.4	14202	0
Parkersburg-Marietta						
Area Sources	2	85	46	445	24680	0
Point Sources	0	5354	0.6	0.1	664	0
Total	2	5439	46.6	445.1	25344	0
Steubenville-Weirton Wheeling						
Area Sources	9	273	55	1141	33080	0
Point Sources	0	11970	42	2	3375	109865
Total	9	12243	97	1143	36455	109865

TABLE E-1 (Continued)
FUEL USE SUMMARY

Air Quality Control Region	Coal (10^3 Tons)		Oil (10^3 Barrels)		Gas (10^6 cu. ft.)	
	Anthracite	Bituminous	Residual	Distillate	Natural	Process
Allegheny						
Area Sources	0	100	48	365	9090	0
Point Sources	0	0	0	0	0	0
Total	0	100	48	365	9090	0
Central West Virginia						
Area Sources	0	54	37	85	11920	0
Point Sources	0	0	0	0	0	0
Total	0	54	37	85	11920	0
Eastern Panhandle						
Area Sources	0	20	21	330	4490	0
Point Sources	0	0	0	0	0	0
Total	0	20	21	330	4490	0
Kanawha Valley						
Area Sources	0	35	99	117	29530	0
Point Sources	0	1612	0	0	0	0
Total	0	1647	99	117	29530	0
North Central West Virginia						
Area Sources	0	81	80	140	23090	0
Point Sources	0	0	0	0	0	0
Total	0	81	80	140	23090	0

TABLE E-1 (Continued)
FUEL USE SUMMARY

Air Quality Control Region	Coal (10^3 Tons)		Oil (10^3 Barrels)		Gas (10^6 cu. ft.)	
	Anthracite	Bituminous	Residual	Distillate	Natural	Process
Southern West Virginia						
Area Sources	0	197	109	172	15000	0
Point Sources	0	0	0	0	0	0
Total	0	197	109	172	15000	0

a. Source: Stationary Source Fuel Summary Report, NEDS, October, 1974